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21186	7590	05/12/2006	EXAMINER	
SCHWEGMAN, LUNDBERG, WOESSNER & KLUTH, P.A.			JOLLEY, KIRSTEN	
P.O. BOX 2938			ART UNIT	
MINNEAPOLIS, MN 55402			PAPER NUMBER	
			1762	

DATE MAILED: 05/12/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/656,745

Applicant(s)

COURTENAY, ROBERT WILLIAM

Examiner

Kirsten C. Jolley

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 28 February 2006.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 17 and 31-41 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 17 and 31-41 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Response to Arguments

1. The objections to the abstract and specification have been withdrawn in response to Applicant's amendments.
2. The 35 USC 112, 1st and 2nd paragraph rejections have been withdrawn in response to Applicant's amendments to the claims, and in response to Applicant's arguments with respect to the limitation of "defining said first point to be independent of a rotation of said surface."
3. Applicant's arguments filed February 28, 2006 have been fully considered but they are not persuasive.

With respect to the Tomoeda et al. reference, Applicant argues that Tomoeda recites moving its nozzle 120 from a point (1) inward of the edge to the edge in a first direction, then reverses to a second direction to the other edge, and then moves in a third direction to a waiting position (3). The Examiner notes that while the claim requires "spraying said material from said nozzle while moving said nozzle in a single direction from the first point to a second point of said circumference," the use of "comprising" language in line 2 of claims 17 and 39 is broad and open to the existence of additional process steps, such as Tomoeda's first step of moving the nozzle inward from point (1) or subsequent step of reversing and moving the nozzle in a third direction. The transitional term "comprising," which is synonymous with "including," "containing," or "characterized by," is inclusive or open-ended and does not exclude additional, unrecited elements or method steps. *Moleculon Research Corp. v. CBS, Inc.*, 793 F.2d 1261, 229 USPQ 805 (Fed. Cir. 1986); *In re Baxter*, 656 F.2d 679, 686, 210 USPQ 795, 803 (CCPA 1981);

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Ex parte Davis, 80 USPQ 448, 450 (Bd. App. 948). The step (2) illustrated in Figure 18C in Tomoeda et al. meets the limitation of spraying material while moving the nozzle in a single direction from the first point to a second point of the circumference. Further, Tomoeda teaches that the nozzle may stop at the second point of the circumference, and not reverse back to the original position (3).

With respect to the Samuels reference, Applicant argues that Samuels teaches away from the recitation in claim 17 because the nozzle in Samuels is reciprocated, or moves back and forth over the wafer. As discussed above, the use of “comprising” language in line 2 of claims 17 and 39 renders the claims broad and open to the existence of additional process steps. While the Examiner acknowledges that Samuels repeatedly moves back and forth across the substrate surface while spraying, the claims are not limited to only a single movement across the substrate. Rather the claims require *a* step of spraying in a single direction from the first point to the second point of the circumference. The claims are open to the inclusion of additional process steps, including additional spraying steps traversing the substrate surface from the first point to the second point, or from the second point to the first point. The limitation “in a single direction” in claims 17 and 39 refers only to the spraying step claimed; it does not limit the claim to only a single spraying step. For this reason, the rejections over Samuels are maintained, and are now 35 USC 102(b) rejections.

Further, new claims 39-41 are newly rejected over the Sakawaki reference.

Claim Rejections - 35 USC § 112

4. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

5. Claims 37 and 39-41 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

It is the Examiner's position that claim 37 contains new matter because the specification does not appear to disclose that organic solvent is the material sprayed from the nozzle during its process. While paragraph [0017] discloses that less organic solvent is used, it appears to be referring to the organic solvent present in a liquid dielectric composition, not organic solvent used alone as claimed. Further, paragraph [0026] does not disclose use of organic solvent as the composition to be sprayed.

It is the Examiner's position that the following limitations in claim 39 contain new matter: "positioning the nozzle generally over the edge; beginning spraying the wafer-coating material from the nozzle *at a first point on a diameter* of the wafer; while spraying, moving the nozzle in a single direction from the first point to a second point on the diameter, over the center point and to the edge of the wafer surface; stopping spraying *at the second point*" [emphasis added]. The claim, as written, broadly reads on starting spraying at any first point along the diameter, and stopping spraying at any second point along the diameter (while the nozzle

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traverses the entire diameter). Applicant does not appear to have been in possession of this invention at the time the application was filed. The specification discloses only two scenarios where the nozzle traverses along the diameter of the substrate starting at the outside: where the nozzle starts dispensing at the outside edge of wafer and discontinues dispensing at the center point of wafer, and where the nozzle begins dispensing at the outside edge of wafer and dispenses solution across the diameter and discontinues at the opposite outside edge of wafer (both disclosed in paragraph [0024] of the specification). Therefore claim 39 is broader than the original disclosure and contains new matter.

Claim Rejections - 35 USC § 102

6. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

7. Claims 17, 37, and 39 are rejected under 35 U.S.C. 102(e) as being anticipated by Tomoeda et al. (US 5,626,913).

In the embodiment described at col. 14, line 48 to col. 15, line 13, and illustrated in Figure 18C, Tomoeda et al. discloses a method of depositing a material along a diameter of a surface having a first edge, a center, and a second opposite edge, comprising: providing a nozzle; positioning the nozzle generally over the first edge, over a first point along a

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circumference of the surface; spraying material from the nozzle while moving the nozzle in a single direction from the first point to a second point on said circumference; stopping motion of the nozzle after it passes over the center, over the second opposite edge, and over a second point along said circumference; and then rotating the surface. While Tomoeda et al. also sprays material while moving the nozzle in another first direction (1) as shown in Figure 18B, the claim's use of "comprising" language in line 2 is broad and open claim language that is open to the use of additional process steps. The transitional term "comprising," which is synonymous with "including," "containing," or "characterized by," is inclusive or open-ended and does not exclude additional, unrecited elements or method steps. *Moleculon Research Corp. v. CBS, Inc.*, 793 F.2d 1261, 229 USPQ 805 (Fed. Cir. 1986); *In re Baxter*, 656 F.2d 679, 686, 210 USPQ 795, 803 (CCPA 1981); *Ex parte Davis*, 80 USPQ 448, 450 (Bd. App. 948). Thus, there is nothing in the claim that excludes the use of additional spraying/moving steps which include moving the nozzle in another direction.

Further, while Tomoeda et al. also supplies material to points other than along the diameter (because material is applied over the entire substrate surface), Tomoeda et al. none-the-less supplies material along the diameter as claimed.

It is noted that "diameter" is defined as "a chord passing through the center of a figure or body" or "the length of a straight line through the center of an object" in Merriam-Webster's Collegiate Dictionary, Tenth Edition. Similarly, "circumference" is defined as "the external boundary of a figure or object." Therefore, claim 17 is not limited to a circular substrate.

As to claim 37, it is known that developer solution comprises organic solvent.

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8. Claim 39 is rejected under 35 U.S.C. 102(b) as being anticipated by Sakawaki (US 4,267,212).

Sakawaki discloses a process of depositing a wafer-coating, liquid material along a diameter of a wafer surface having a circumferential edge and a center, comprising: rotating the wafer surface; providing a nozzle; beginning spraying the wafer-coating material from the nozzle at a first point on a diameter of the wafer (at the center of the wafer); while spraying, moving the nozzle in a single direction from the first point to a second point on the diameter (at the wafer's edge), over the center point and to the edge of the wafer surface; and stopping spraying at the second point while positioning the nozzle generally over the edge. Sakawaki teaches that its nozzle traverses, while spraying, from the center point of the wafer to the wafer's edge, along the diameter (col. 4, lines 8-19). There is not a required order of the process steps of claim 39, therefore the step of positioning the nozzle generally over the edge is accomplished at the end of Sakawaki's process when the nozzles ends at a position over the edge of the wafer substrate.

9. Claims 17, 34, and 39 are rejected under 35 U.S.C. 102(b) as being anticipated by Samuels (US 4,457,259).

Samuels discloses a method of depositing a material along a diameter of a surface having a first edge, a center, and a second opposite edge, comprising: rotating said surface; providing a dispensing nozzle 21; positioning the nozzle generally over the first edge, over a first point along a circumference of the surface; moving the nozzle along the diameter; spraying material from the nozzle while moving the nozzle; stopping motion of the nozzle after it passes over the center, over the second opposite edge, and over a second point along said circumference; and then

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moving the nozzle back over the same path again while dispensing. Figure 2 illustrates that dispensing nozzle 21 moves along the diameter of the wafer surface 17. Additionally or alternatively, the Background section in col. 1, lines 31-54 discloses a similar process.

Samuels teaches that the nozzle moves across the diameter of the substrate a plurality of times. However, the claims are not limited to only a single movement across the substrate. In a single movement of the nozzle across the substrate, the nozzle meets the limitation of spraying material from the nozzle while moving the nozzle in a single direction from the first point to a second point of the circumference. The use of “comprising” language in line 2 of claims 17 and 39 renders the claims broad and open to the existence of additional process steps, including additional spraying steps traversing the substrate surface from the first point to the second point, or from the second point to the first point.

Claim Rejections - 35 USC § 103

10. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

11. Claims 31-33, 35-36, 38, and 40-41 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tomoeda et al.

As to claims 31 and 40, Tomoeda et al. does not teach a rotation speed in the claimed range. However, the use of 200 rpm (col. 15, line 9) is merely exemplary and not limiting. It is

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well know to one of ordinary skill in the art to adjust the rotation speed of the substrate depending on the length of time of rotation, the particular materials used, the humidity and temperature of the surrounding environment, the amount of spreading or drying needed, etc. It is well settled that determination of optimum values of cause effective variables such as these process parameters is within the skill of one practicing in the art. *In re Boesch*, 205 USPQ 215 (CCPA 1980).

As to claims 32-33 and 40, Tomoeda et al. is silent with respect to the temperature and humidity during rotating. The Examiner notes that a humidity of 50% and temperature of 72 degrees F are well known and commonly used during spin coating processes. It would have been obvious for one having ordinary skill in the art to have used the claimed temperature and humidity values as a matter of routine experimentation, since they are similar to room temperature, in the absence of a showing of criticality.

As to claims 35-36, it would have been obvious to have sprayed through apertures 122 in Tomoeda et al.'s nozzle in a fine mist, in a dispersed and divergent pattern, as a matter of design choice of the nozzle. Spraying in a fine mist is well known in the art and would have been well within the skill of an ordinary artisan skilled in the art.

As to claims 38 and 41, Tomoeda et al. does not teach using polymer dielectric coating material in its process. However, spin coating polymer dielectric solutions is very well known in the spin coating art. It would have been well within the skill of an ordinary artisan to have used Tomoeda et al.'s process to apply a polymer dielectric coating material to a substrate since spin coating polymer dielectrics is so conventional and Tomoeda et al. is directed to an improved spin coating process.

12. Claims 40-41 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sakawaki.

As to claim 40, Sakawaki teaches rotating its substrate at 1000-6000 rpm (col. 4, lines 58-62). Overlapping ranges are *prima facie* evidence of obviousness. It would have been obvious to one having ordinary skill in the art to have selected the portion of Sakawaki's rotation range that corresponds to the claimed range. *In re Malagari*, 184 USPQ 549 (CCPA 1974). Further, Sakawaki is silent with respect to the temperature and humidity during rotating. The Examiner notes that a humidity of 50% and temperature of 72 degrees F are well known and commonly used during spin coating processes since they are approximate room/ambient temperature and humidity. It would have been obvious for one having ordinary skill in the art to have used the claimed temperature and humidity values as a matter of routine experimentation, since they are similar to room/ambient temperature and humidity, in the absence of a showing of criticality.

As to claim 41, Sakawaki teaches that "any kind of coating solution" may be used in col. 2, lines 56-57. Spin coating polymer dielectric solutions is well known in the spin coating art. It would have been well within the skill of an ordinary artisan to have used Sakawaki's process to apply a polymer dielectric coating material to a substrate since spin coating polymer dielectrics is so conventional and Sakawaki is directed to an improved spin coating process.

13. Claims 31-33, 35-38, and 40-41 are rejected under 35 U.S.C. 103(a) as being unpatentable over Samuels.

As to claims 31 and 40, Samuels does not teach a rotation speed. It is well known to one of ordinary skill in the art to adjust the rotation speed of the substrate depending on the length of

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time of rotation, the particular materials used, the humidity and temperature of the surrounding environment, the amount of spreading or drying needed, etc. It is well settled that determination of optimum values of cause effective variables such as these process parameters is within the skill of one practicing in the art. *In re Boesch*, 205 USPQ 215 (CCPA 1980).

As to claims 32-33 and 40, Samuels is silent with respect to the temperature and humidity during rotating. The Examiner notes that a humidity of 50% and temperature of 72 degrees F are well known and commonly used during spin coating processes. It would have been obvious for one having ordinary skill in the art to have used the claimed temperature and humidity values as a matter of routine experimentation, since they are similar to room temperature, in the absence of a showing of criticality.

As to claims 35-36, it would have been obvious to have sprayed through apertures in Samuels' nozzle in a fine mist, in a dispersed and divergent pattern, as a matter of design choice of the nozzle. Spraying in a fine mist is well known in the art and would have been well within the skill of an ordinary artisan skilled in the art.

As to claim 37, Samuels generally teaches use of a "coating liquid" but does not limit its invention to a particular type of coating liquid. It is well known that nearly all coating materials contain or are made up of organic solvent, including photoresist solution, dielectric material, developer solution, rinse solution, etc. It would have been well within the skill of an ordinary artisan to have used an organic solvent material, or a material containing organic solvent, in Samuels process with the expectation of successful results since such is so well known in the spin coating art.

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As to claims 38 and 41, Samuels does not teach using polymer dielectric coating material in its process. However, spin coating polymer dielectric solutions is very well known in the spin coating art. It would have been well within the skill of an ordinary artisan to have used Samuels' process to apply a polymer dielectric coating material to a substrate since spin coating polymer dielectrics is so conventional and Samuels is directed to an improved spin coating process.

Conclusion

14. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

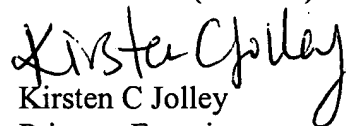
A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

15. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kirsten C. Jolley whose telephone number is 571-272-1421. The examiner can normally be reached on Monday to Wednesday.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Timothy Meeks can be reached on 571-272-1423. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).


Kirsten C Jolley
Primary Examiner
Art Unit 1762

kcj